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FEDERAL COMMUNICATIONS COMMISSION
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November 10, 1994

Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, DC 20554

**NOTICE OF WRITTEN EX PARTE PRESENTATION**

Re: CC Dkt. No. 92-77

DOCKET FILE COPY ORIGINAL

Dear Mr. Caton:

Pursuant to the request of Mark Nadel, a member of the Common Carrier Bureau staff, the American Public Communications Council hereby submits two copies of the enclosed document, "The Marketing Costs of Billed Party Preference," prepared by Strategic Policies Research. The document is intended to respond to an inquiry from Mr. Nadel regarding the costs of interexchange carrier marketing activity attributable to implementation of the Commission's billed party preference proposal.

At Mr. Nadel's request, copies of this submission have been served on Len Sawicki, attorney for MCI Telecommunications Corporation, and Richard Juhnke, attorney for Sprint Corporation.

Sincerely,

Robert F. Aldrich

Robert F. Aldrich

RFA/gg
Enclosure

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**Ex Parte Presentation**
**CC Docket No. 92-77**
**(Two copies submitted to FCC Secretary)**

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# THE MARKETING COSTS OF BILLED PARTY PREFERENCE

NOVEMBER 7, 1994

# The Marketing Costs of Billed Party Preference

We recently completed a study, *Quantifying the Costs of Billed Party Preference*[1] (SPR study), which was filed with the Federal Communications Commission by American Public Communications Council as part of its reply comments in the Billed Party Preference (BPP) proceeding. Our purpose in preparing that study was to quantify the total social costs of setting up and operating a BPP system. In the *Further Notice of Proposed Rulemaking* the Commission also attempted to estimate the costs of BPP. Our study included the marketing costs that interexchange carriers (IXCs) would incur to compete for the long-distance traffic affected by BPP. The purpose of this note is to provide additional justification for the level of marketing costs that we estimated.

The SPR study's base case estimate was that incremental marketing costs would be 8 percent of the incremental revenues to be contested; *i.e.,* the revenues to be allocated through BPP. We showed this to be conservative. In 1993, MCI's selling and administrative costs amounted to 28 percent of sales. If we make the reasonable assumption that administrative costs were approximately 10 percent of sales, the ratio of selling costs to sales was about 18 percent. Sprint indicated in the proceeding that it was willing to spend up to 20 percent of sales associated with an aggregator in order to get the aggregator's traffic. In our analysis, we assumed that incremental marketing costs would be approximately 8 percent of incremental sales. Thus, in our model incremental marketing costs are less than half of MCI's average ratio of selling costs to sales. They are less than 40 percent of what Sprint indicated it is willing to pay to get additional sales.

We assumed a marketing cost of 8 percent of 34 Cents per minute or 2.72 cents per minute. In comparison, Sprint's commissions of 20 percent today correspond to a marketing cost of 6.8 cents per minute on a 34 cent per minute call.

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[1] Charles L. Jackson and Jeffrey H. Rohlfs, *Quantifying the Costs of Billed Party Preference* (Bethesda, Md.: Strategic Policy Research, Inc. on behalf of American Public Communications Council, Sept. 14, 1994). This study was included in reply comments filed with the Federal Communications Commission in CC Docket No. 92-77, *In the Matter of Billed Party Preference for 0+ InterLATA Calls*, Further Notice of Proposed Rulemaking.

In this paper, we demonstrate that it is reasonable to model advertising costs (the primary selling costs in this instance[2]) as a constant fraction of sales. It also seems reasonable to assume that other selling costs have a similar relationship to sales, since they respond to the same underlying incentives.[3] According to that model, incremental marketing costs would be far higher than we estimated in our previous study — perhaps more than twice as high. Hence, we conclude that the incremental marketing costs estimated in that study are conservative.

We can justify the constant advertising-to-sales assumption with two rationales: (1) a theoretical result from the economic analysis of profit-maximization, which when combined with two empirical results from telecommunications demand analysis, implies that the advertising-to-sales ratio should remain constant; and (2) a general empirical result from the literature on the economics of advertising, which suggests that the advertising-to-sales ratio is not significantly affected as demand and advertising both increase. We will explain each rationale.

## I. Profit-Maximizing Theoretical Result

A basic hypothesis of much of economic thought is that each firm pursues its own self-interest and seeks to maximize its profits. Economists have worked to understand the implications of firms pursuing this goal. For example, one implication is that the firm will adjust its price until the marginal revenue it receives from additional output equals the marginal cost it incurs to produce that output. Similarly, the firm will undertake advertising activity until the profit associated with the additional demand stimulated by additional advertising is equal to the cost of that advertising. These two important implications, one for price adjustments and one for advertising, which hold when the firm is seeking to maximize its profits, are also related. This relationship was first shown in 1954 by Robert Dorfman and

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[2] Many customers of IXCs are billed by local exchange carriers. The IXCs have virtually no direct contact with such customers, except to handle complaints.

[3] Unfortunately, we have been unable to find studies that model nonadvertising selling costs.

Peter O. Steiner.[4] The relationship, precisely stated, is that the elasticity of demand with respect to price will equal the marginal value product of advertising. To put it in plain terms, the firm has various tools, such as price adjustments or advertising, available to it as it pursues its objective of profit maximization. Economic theory predicts that it will use each tool up to that point where the net additional benefit from using each of the tools is the same. This is shown in the Technical Appendix.

This theoretical relationship between the price elasticity of demand and the marginal value product of advertising can be combined with empirical estimates from telecommunications demand analysis to yield an inference about the advertising-to-sales ratio. This will now be done.

## A. Long-distance price elasticity of demand

Empirical analysis in telecommunications has provided many estimates of the price elasticity of long-distance demand.[5] The various efforts that have been made to estimate long-distance elasticities have focused primarily on the demand for direct-dialed calls. The only recent publicly-available estimate we have found of the price elasticity of the demand for operator-handled calls, such as the calls that would be affected by BPP, was performed by Bell Canada.[6] Those estimates range from -0.072 to -0.181, which show that the demand for operator-handled calls is far more inelastic than most estimates of the demand elasticity for direct-dialed calls. This indicates that consumers of operator services are less price-sensitive than are consumers of DDD calls. It is, therefore, reasonable to assume that they are less inclined to switch carriers for an equal percentage cost saving. This, in turn, implies greater use of advertising, since price reductions are unlikely to stimulate much additional demand.

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[4] Robert Dorfman and Peter O. Steiner, "Optimal Advertising and Optimal Quality," *American Economic Review* 44 (December 1954): 826-836.

[5] This work is ably summarized in Lester D. Taylor, *Telecommunications Demand in Theory and Practice* (Dordrecht, Boston, and London: Kluwer Academic Publishers, 1994).

[6] Bell Canada, *Bell Canada's November 1992 Price Elasticity Research Report Pursuant to Telecom Decision CRTC 90-25* (November 15, 1992).

The available information on the marketing costs of long-distance carriers is not specific to operator-handled calls but is in aggregate form. Therefore, to show that the advertising-to-sales ratio, looked at in the aggregate, at least stays constant we need an elasticity estimate for all long-distance calls. We will employ the conservative assumption that the elasticity for operator-handled calls is the same as the elasticity for direct-dialed calls. If anything, the elasticity for BPP calls is lower than what we are assuming. Therefore, we can conservatively assume that the overall elasticity at least should not increase. A lower elasticity would be associated with increased advertising expenditures.

## B. Long-distance advertising elasticity of demand

The elasticity of long-distance demand with respect to advertising was estimated by James Griffin in 1982.[7] His data set consisted of 12 years of pooled intrastate long-distance data for five southwestern states (1966 to 1978). He was able to estimate the advertising elasticity very precisely with a model that uses the assumption that the advertising elasticity remains constant. Consequently, we would not expect the advertising elasticity to vary markedly as the amount of contested revenue increases as a result of BPP.

Griffin's estimate is not specific to operator-handled calls such as BPP calls. However, applying his estimate to BPP calls is conservative for two reasons. First, that a major long-distance carrier such as Sprint today spends 20 percent on marketing operator service calls suggests that BPP calls would be at least as profitable as other long-distance calls and therefore that, if anything, one should expect carriers to market BPP more intensively as a result.[8] Second, there are certain per customer fixed costs that carriers incur. These include the costs of setting up a customer account and rendering a monthly bill. Also, a long-distance carrier's obligation to contribute to the Universal Service Fund is based on its number of presubscribed customers. A carrier that already incurs such costs for a household because of 1+

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[7] James M. Griffin, "The Welfare Implications of Externalities and Price Elasticities for Telecommunications Pricing," *Review of Economics and Statistics* 64 (Feb. 1982): 59-66.

[8] This assumes that the added costs of BPP processing are recovered from customers of some other service. If the costs of BPP processing were recovered from BPP users, then the profitability and marketability of BPP might suffer substantially.

calls will not incur them again to serve that household's 0+ calls. Its marketing efforts to win that household's BPP traffic will produce greater profits as a result.

### C. Summary

These results fit together and provide justification for assuming that the advertising-to-sales ratio would remain approximately constant for the long-distance traffic affected by BPP. Based on theory, we expect that the price elasticity to be equal to the marginal value product of advertising. We expect that the price elasticity of long-distance demand will not increase. Therefore, we expect that the marginal value product of advertising would not increase either. Griffin's success in estimating the advertising elasticity in long-distance demand suggests that elasticity should not change because of the portion of traffic affected by BPP. If both the marginal value product of advertising and the advertising elasticity for long distance demand remain constant, then the advertising-to-sales ratio will as well. This is shown in the Technical Appendix.

## II. Economics of Advertising Result

Another justification for estimating the marketing costs of BPP based on a constant advertising-to-sales ratio comes from the academic literature on the economics of advertising. The finding from this research is that in general terms the advertising-to-sales ratio has at best a very weak relationship with the level of demand. William S. Comanor and Thomas A. Wilson undertook some pioneering research in the economics of advertising.[9] Their book and this literature mostly deal with the question of the social desirability of advertising: whether it provides social benefits, whether it leads to increased market power, etc. However, their empirical analysis also sheds some light on the relationship between the advertising-to-sales ratio and the level of demand. In a multiple regression analysis using advertising-to-sales as the dependent variable, Comanor and Wilson report that the estimated coefficient (which they reported as positive) on the variable for the level of demand is not statistically significant; that is, it cannot be said to be different from zero.[10] Thus, Comanor and Wilson found no statistical evidence that the advertising-to-sales ratio declines as demand increases. That is, they found no evidence of "advertising saturation."

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[9] William S. Comanor and Thomas A. Wilson, *Advertising and Market Power* (Cambridge, Mass.: Harvard University Press, 1974).

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[10] *Id.*, 152.

## Technical Appendix

The assumption that the ratio of advertising (and other marketing activities) to sales remains constant as sales increase under BPP is expressed in the notation of the academic literature on advertising as:

$$\frac{a}{pq} = constant \tag{1}$$

where $a$ is advertising and $pq$ (or price x quantity) is sales. We will show the conditions under which this relationship holds.

The firm is assumed to maximize profits. Its profit function is defined as:

$$pq(p,a) - c(q) - a \tag{2}$$

where $p$ is price, $q$ is quantity, $c$ is cost, and $a$ is advertising. $q$ is a function of both price and the level of advertising. $c$ is a function of quantity.

The marginal condition for price adjustments is the familiar one that marginal revenue equals marginal cost, or:

$$q + \left(p - \frac{dc}{dq}\right)\frac{\partial q}{\partial p} = 0 \tag{3}$$

The marginal condition for advertising is:

$$p\,\frac{\partial q}{\partial a} - \frac{dc}{dq}\frac{\partial q}{\partial a} - 1 = 0 \tag{4}$$

Solving for $dc/dq$ in Equation (4), substituting the result in Equation (3), and simplifying, we obtain the following expression:

$$e_p = e'_a \tag{5}$$

where the elasticity of demand with respect to price is defined as:

$$e_p = \frac{-p \, \partial q}{q \, \partial p} \tag{6}$$

and the marginal value product of advertising is defined as:

$$e'_a = \frac{p \, \partial q}{\partial a} \tag{7}$$

This is the theoretical result from profit maximization that was referred to in the body of this note. Now we will combine this with the empirical results that were also described there.

If both the marginal value product of advertising and the advertising elasticity for long distance demand remain constant, this implies that the advertising-to-sales ratio will not change either. The advertising elasticity is:

$$e_a = \frac{a \, \partial q}{q \, \partial a} \tag{8}$$

Recall that the marginal value product of advertising is:

$$e'_a = \frac{p \, \partial q}{\partial a} \tag{9}$$

Note that these two expressions can be related:

$$\left(\frac{a}{pq}\right) = \frac{e_a}{e'_a} \tag{10}$$

From this expression it is seen that if both the marginal value product of advertising and the advertising elasticity for long distance demand remain constant, then the advertising-to-sales ratio will as well.